

July 3, 2011

Thomas Howard, Executive Director
Charles Hoppin, Chair
State Water Resources Control Board
1001 I Street
PO Box 100
Sacramento, CA 95812-0100



Re: Draft Environmental Impact Report Russian River Frost Protection Regulation and proposed regulation; Amendment to Division 3 of Title 23 of the California Code of Regulations

Dear Director Howard, Chairman Hoppin, Water Board Members, and Staff:

Please make these comments a part of the official administrative record of the State Water Resources Control Board's review of water diversion practices for frost protection of crops in the Russian River watershed in Mendocino and Sonoma counties. We hereby incorporate by reference all comments previously submitted to the state on the subject of diversions for frost control by Northern California River Watch, the Center for Biological Diversity, and Coast Action Group, their agents, and representatives. These comments include the next four emails that contain attachments and pictures referenced herien.

The version of the Proposed Regulation available to the public and that is the subject of the draft environmental impact report (DEIR) is designated draft. The enclosed comments and attachments address first needed changes in the DEIR and then comments on the draft proposed regulation in its present form. The undersigned reserve the right to submit additional comments on the DEIR when the regulation is no longer in draft form.

Introduction



Individual and cumulative diversions of water from critical habitat, for frost protection of wine grapes, harm and harass endangered coho salmon and threatened steelhead trout and threatened chinook salmon. The federal agency responsible for the protection and recovery of these fish species, the National Marine Fisheries Service, has indicated many times that the destruction of these species is widespread (photos of numerous protected fish killed in one small tributary are attached in separate emails Frost Comments NCRW II, III, and IV). Highly respected scientists that specialize in these issues agree that such diversions have the affect of causing rapid and harmful dewatering events in numerous tributaries (Merelender, Deitch, and Kondolf-2007-2008). Essential behavioral patterns, in addition to “stranding mortalities”, are impaired and thousands of individuals continue to be sacrificed by the industry and the state in this protracted process of regulating frost diversions (See attachment Roy-NOAA page 3). The state's duty is clear, and it must use all the tools in its toolbox to finally ensure, as opposed to just lessening risks, that no individuals in the protected categories are sacrificed due to frost pumping activities.

If the state should make changes to the draft proposed regulation, thus pushing out the timeline for certifying the DEIR, it would need to institute emergency rules to avert "take" in the interim period. Such emergency rules were recommended in February of 2009, and the state chose not to act on that recommendation and fish kills have continued. As will be addressed below, the draft proposed regulation contains important improvements on the one hand and weakens those improvements with the introduction of local governance and implementation, diversions prior to risk assessment, diversions prior to approved monitoring plans, and prior to complete inventories, a corrective process of up to three years, and delayed reporting, among other weaknesses.

Endangered Species

As summarized by many courts and as the state no doubt fully understands, the ESA requires that states must ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat of such species. The ESA also prohibits any action that causes a "taking" of any listed species of endangered fish or wildlife.

"Take" is defined as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct.” Through regulations, the term “harm” is defined as “an act which actually kills or injures wildlife”. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harassment is defined as an intentional or negligent act, whether through and a action or omission, that creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns such as breeding, feeding, and sheltering.

Rapid dewatering of critical fish habitat is unequivocally impairing essential behaviors, breeding, and feeding of listed species and is thus harming and harassing endangered coho salmon, and threatened steelhead trout and chinook salmon. Taking an overly narrow view of the problem, for example, limiting the regulation to stranding mortalities is to adopt the industry's view. The concerned public and many resource agencies see the problem as much broader and urge the state to pursue a regulation that accepts that the unnatural and rapid dewatering of the Russian River stream system impairs all life stages of salmonids and severely impairs their ability to recover from their collapsed status.

The state has an opportunity and duty to regulate diversions related to frost protection of wine grapes in a manner that avoids extinction and that contributes significantly to the recovery of the anadromous fish who overcome many natural challenges but who do finally succumb to the unnecessary and improper dewatering of their historic habitat.

1. DRAFT ENVIRONMENTAL IMPACT REPORT

The Proposed Activity is the Adoption of a Regulation with the Purpose of Preventing Salmonid Stranding Mortalities due to Instantaneous Demand for Frost Protection while minimizing the impacts of the regulation on the use of water for purposes of frost protection.

In support of this objective, the State Water Board's goals are to (a) promote local development and governance of programs that prevent stranding mortality during the frost season, (b) provide transparency of diversion and stream stage monitoring data, (c) ensure that the State Water Board can require any changes to WDMP's that are necessary for WDMP's success and implementation on a timely basis, (d) provide for State Water Board enforcement against non-compliance, and (e) develop a comprehensive regulation that includes all diverters of water for frost protection use, including diverters who pump groundwater that is hydraulically connected to the stream system.

Project Description

The project description properly describes the widespread nature of the problem to be regulated. "Scientific research indicates that the two episodes of stream dewatering documented by NOAA Fisheries were not isolated incidents, and diversions for purposes of frost protection likely are adversely affecting salmonids throughout the Russian River watershed." (DEIR p. 10).

A project description in a DEIR must not be narrowed in a manner that restricts the consideration of alternatives. The Project Description in this case is very narrow. The proposed project is to establish a regulation that will prevent salmonid stranding mortality while minimizing the impacts of the regulation on the use of water for purposes of frost protection. (DEIR, page 9). By using the phrase narrow phrasing "while minimizing the impacts on the use of water", the description leaves very little room to consider a reasonable range of alternatives to the proposed regulation. This is improper. Only those alternatives that minimize impacts on the industry fit such a narrow project description.

The proposed regulation is largely based upon the reasonable use doctrine which requires use to be weighed against availability of feasible alternatives, as opposed to minimal impact on frost protection activities. Furthermore, the state explains the reasons for the regulation thus. "Given the potential impact to salmonids and the availability of feasible alternatives to simultaneous diversions from the stream, uncoordinated, unregulated diversions of water from the Russian River stream system for purposes of frost protection are unreasonable." The regulation uses the word feasible alternatives not alternatives that minimize affects of frost protection activities of the industry. A regulation that would employ feasible alternatives as opposed to a regulation that seeks only to minimize affects on growers are widely disparate in application.

By using the phrase "while minimizing the impacts on the use of water", the description leaves very little room to consider a reasonable range of alternatives to the proposed regulation. This is improper and leaves only those alternatives that minimize impacts on the industry rather those alternatives that are feasible.

With respect to the statement in the DEIR under Project Description, that reads, "[t]he proposed regulation would ensure that tributaries are "protected", in addition to the main stem of the Russian River."(DEIR page 10), that statement is inaccurate. "Protected" means not harmed. The proposed regulation does not propose to protect critical watersheds and listed species from "harm" as harm is defined under the ESA and explained above. The proposed draft regulation only proposes to prevent stranding mortalities - a significantly lower standard and narrower purpose.

Existing Environmental Setting

The DEIR includes figures only on the economic value of crops such as vineyards. And in doing so, the DEIR looked at none other than the California Farm Bureau's website (DEIR p. 41). There is no attempt,

however to quantify what salmon and steelhead are worth, what their functioning habitat is worth, how much it costs to run hatcheries, to restore destroyed habitat, and to run a system that is in place to manage the excesses of the industry that complains that they might have to change their practices in significant ways precisely due to its own excesses.

Analyses of what it actually costs to replace the functions that habitat and species perform have been conducted by others. For example, it has been determined that, "[a]llowing the current rate of biodiversity loss to continue could cost the global economy untold trillions." <http://summitcountyvoice.com/2010/05/30/the-cost-of-extinction/> and <http://www.ciel.org/Publications/summary.html> and many other reports. The industry's economics, a major concern of the regulation, are in many ways artificial. A regulation cannot possibly properly gauge its affect on an industry that has externalized many of its costs for decades. Extractive industries have always had many of their costs carried by the public, regulatory agencies, and the environment. Requiring them to internalize costs by properly protecting the environment through adequate regulation is how industries of the twenty-first century should be operating and how the environment will be properly valued.

In addition, according to the Marin Institute, seven wine companies produce 82 percent of all wine sold in the U.S., and six of these are global corporations. Seven of the top ten wine companies (by U.S. sales) are also global corporations with wine, spirits, and beer brands integrated into their product portfolios. ("Myth of the Family Farmer", Marininstitute.org). These statistics suggest that the wine industry is not made up of fragile mom and pop farms but a handful of powerful corporations with very thirsty shareholders with their eyes on California's north coast streams.

In the absence of substantive evidence of the value of the salmonids in the Russian River watershed, the DEIR is inadequate. The evaluation of the proposed activity - adopting a regulation, and the discussion of feasible alternatives, minimizing affects on the industry, a weighing of the relative benefits and costs, and analysis of cumulative impacts is impossible without some information on the economic value of listed species and their habitat.

Alternatives to the Proposed Regulation

Generally speaking, the DEIR overstates the adverse environmental impacts to the industry, and the environment, of the regulation of diversions. This type of characterization of the potential adverse impacts of this regulation undermines a credible alternatives analysis. Dam modification or removal and reservoir construction (with a valid claim to pump, appropriate, and store the state's water) are activities that are supervised by resource agencies with a keen interest in species recovery and are likely, therefore to have minimal impacts.

Alternative One No Project

The no project alternative is described as unable to meet the goals of avoiding stranding mortalities and therefore not an environmentally superior alternative. This analysis presumes, however, that a regulation that has as one of its primary goals - minimizing impacts on frost protection activities, that places unwarranted control in the hands of a non-public local governing body or individual, that requires only that monitoring data be made available on an annual basis, which stops short of protecting listed species from harm, and that will, in fact, give cover to activities that threaten "take", is better than no regulation at all. The No Project alternative could conceivably help the salmonids more than the narrowly worded purpose and description of this regulation. The No Project alternative, for example, could force the state to take other measures that would be more protective like emergency regulations and/or enforcement of a prohibition on the use of water for frost protection without regard for the industry's economics.

A regulation that is not adequate, as in this case that has no real time monitoring requirement among other serious flaws, can be worse than no regulation at all. The DEIR must acknowledge this, perhaps counter

intuitive, reality. To date, in Sonoma County, the growers in the Grape Creek watershed apparently have, in the absence of a regulation, stopped frost diversions - an alternative to the regulation that clearly protects salmonids.

A broader description of the purpose of the proposed action would properly allow for a reasonable range of alternatives including adoption of a regulation that avoids "take" as in the Grape Creek example, whenever feasible. With such a narrow project purpose provided, the No Project alternative may very well end up being the best alternative. Such an alternative would, as mentioned above, necessitate the promulgation of emergency regulations and/or a prohibition on diversion of surface and hydraulically connected groundwater in order to avoid "take".

Alternative Five

Alternative Five is the regulation plus real-time publicly accessible monitoring. Alternative Five best fits a robust Project Description which is lacking in this case. Among the limited alternatives provided, Alternative Five best achieves the purpose of the regulation. The state must use all the tools in its toolbox when adopting a regulation. In the context of this DEIR, Alternative Five combines an essential tool with the draft proposed regulation. The minimal requirement of real time accessible monitoring as part of a Water Demand Management Plan is essential. Such a requirement is feasible, of minimal expense, does not in and of itself disrupt frost protection activities, and is a preferred alternative to the regulation alone.

The state must not settle for half measures or be convinced that real time monitoring is burdensome especially when the DEIR states that such monitoring is effective at protecting the rare species that are the subject of this regulation. "This alternative would be the most effective in terms of ensuring fast response to situations in which salmonids are at risk for mortality due to stranding.This information may be used by growers to adjust diversions, restore stream stage, and protect salmonids as soon as the risk is identified. " (DEIR p.93).

Furthermore, there are significant funds available from numerous agencies and non-profits (California Land Stewardship Institute, Resource Conservation Districts, and the like) that may be obtained to defray the minimal costs associated with properly monitoring and reporting diversions from critical habitat during times of the year when low flows are likely.

2. COMMENTS ON DRAFT PROPOSED REGULATION

Maintaining adequate flows is the bottom line and the regulation must be cleansed of any components that allow continued diversions in critical habitat until such diversions are determined to be authorized and individually and cumulatively harmless to endangered coho and threatened steelhead trout and chinook salmon.

The WDMP, unfortunately contains components that allow potentially harmful diversions at least for another frost season if not for a much longer time.

The regulation states that use of diverted water and pumping of hydraulically connected ground water for frost protection is unreasonable in the absence of a Water Demand Management Plan approved by the board. Unfortunately, approval of a WDMP can occur before inventory of the frost diversions in the watershed is complete, before the stream stage monitoring strategy is developed (with no timeline on when stream stage plan must be completed), and apparently before the risk assessment is complete. Timelines for completion are protracted if they exist at all.

This regulation is in effect allowing for diversions next spring by simply allowing diverters to send in a form that can be approved before substantive steps are completed. If the industry has not taken appropriate steps over the last many years to complete needed inventories and monitoring of diversions before yet another frost season, they should not be given license to divert in the spring of 2012, and the board needs to consider

adopting interim measures until such time as effective and strictly enforceable measures are in place to protect listed species.

Stranding Mortalities and Take

The use of the phrase "prevent stranding mortalities" is, as explained above, curious and suggests that the state is looking at the problem of harm to listed species in an overly narrow manner which dooms the regulation to failure. Stranding mortalities are not the only harm and harassment to which listed species are subjected from massive diversions from frost protection activities. Strandings may be the most dramatic, however, harm and harassment are broader and include impairment of breeding, sheltering, and feeding which ultimately do lead to mortalities but may take longer to manifest. This concept is not new and must be acknowledged. Industry does not accept this principle of biology, although courts and scientists have recognized it for decades. Regulation must be crafted to avoid "take" related to frost diversions and pumping, in the broadest sense of the word.

Annual reporting is unacceptable. Reporting needs to be in real time and publicly accessible if the regulation is going to rise to the level of effectiveness demanded by the perilous condition of the listed species that are the subject of the regulation. As explained above, such monitoring and reporting is known to be the most effective at protecting the species.

Local Administration

The WDMP concept relies heavily upon a local governing body or individual for administration and implementation. The qualifications, independence, structure, accessibility, funding, among other important information has not been developed in the regulation and leaves large gaps in the WDMP structure undermining its ability to be timely, effective, and protective.

Local administration and implementation of a frost regulation is far from the best strategy for avoiding harm to listed species. This is demonstrated by the minimization of frost problems by the local Farm Bureaus, the local Wine Institute, the Russian River Flood Control and Water Conservation District, large numbers of local growers that insist the problems of the fish are caused by nature, the large number of growers that resist regulation at all, and the code of silence among the growers that perpetuates a diversion problem that could otherwise be solved.

There is no need for a local stakeholders group to administer the regulation. This is a state issue and can be administered economically by requiring real time publicly accessible monitoring prior to diversion for frost. Such a structure costs the state virtually nothing, places the costs on the appropriate parties, and opens up the process in order that success is not dependent upon whether or not the state is well funded or is in a funding crisis.

Interim Measures

The large numbers of plans that one would anticipate will be filed, with the expectation of approval, between adoption of a regulation and March 2012, will put state board staff in a position to approve WDMP's without adequate time to review them and verify content. To avoid placing staff in an untenable position between the high pressure industry groups and protected species, strong interim measures are indicated to protect listed species while allowing the state board staff as much time as it needs to properly and carefully review the hydrology, inventories, stream stage monitoring and reporting plans, and thorough risk assessments.

Corrective Actions

According to the draft regulation, the Water Demand Management Plan (WDMP) is the principle method of administering the frost regulation. A local governing body, which cannot demonstrate that it is an affective watchdog of the fishery, is nonetheless the body called out to determine if diversions have the potential to harm the fishery (862(c)(1)(4)). The good parts of the regulation are severely undermined by such a structure. In addition, the amount of time, as much as three years, provided for instituting corrective measures in the event corrective measures are seen as necessary by the local stakeholders, is equivalent to the three-year life cycle of endangered coho salmon. Three years of a poorly conceived WDMP that affects the ability of coho to survive in a tributary, could result in wiping out that population. WDMPs must be developed that err on the side of conservation, if they err at all, and corrective measures must be identified and rectified as soon as possible. And given the crisis in the fishery, such corrections must be instituted, in any case, prior to the next diversion season. Annual reporting is unacceptable. Reporting needs to be in real time and publicly accessible if the regulation is going to rise to the level of effectiveness demanded by the perilous condition of the listed species that are the subject of the regulation. As explained above, such monitoring and reporting is known to be the most effective at protecting the species.

CONCLUSION

The regulation of frost pumping and diversion activities is welcome and the time the agencies have devoted to this task is greatly appreciated. The public urges the state to resist all efforts to place administration in the hands of an unaccountable body or individual, to resist efforts to allow delays in reporting, and resist approval of diversions before impacts are fully analyzed and threats to listed species eliminated. Non-compliance with any part of the regulation must be considered serious and subject to swift and significant mandatory penalties or in the alternative, characterized by the state as contributing to "take". A regulation that ignores activities that harm or harass protected species or that seeks a political compromise will be inadequate to the task of avoiding "take", and the time to adopt effective regulation is now.

Sincerely,

LARRY HANSON
Northern California River Watch

Attachments emailed July 1, 2011 Frost Comments NCRW II and III

cc: NOAA – Fisheries Service
California Department of Fish and Game
North Coast Regional Water Quality Control Board
Mary Ann King, Russian River Coho Water Resources Partnership and Stewardship, Trout Unlimited
Linda Tandle, Project Coordinator, [Russian River Watershed](#) [RiverView](#) [Coho](#)
[Salmon](#) [Captiv](#) [Biodiversity](#) [Program](#)
[James Eckman](#), [Sea Grant](#) [California](#)
Senator Barbara Boxer
Jeff Miller, Center for Biological Diversity

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National Marine Fisheries Service
Southwest Region, HCD
777 Sonoma Ave., Room 325
Santa Rosa, CA 95404-8528
Tel (707) 575-6061

Fax (707) 578-3435

February 17, 2009

F/SWO22:BLC

MEMORANDUM FOR: Derek Roy
Special Agent, Office of Law Enforcement

FROM: Brian Cluer, Ph.D.
Hydrologist 

SUBJECT: Felta Creek, tributary to Dry Creek, Sonoma County
Dewatering and coho kill, spring 2008

On 22 January 2009 I made a site visit to Felta Creek as requested by the Office of Law Enforcement to provide my professional opinion of what caused the dewatering events reported in spring 2008 of Felta Creek near its confluence with Mill Creek. This report addresses flow conditions and habitat as the flow of Felta Creek diminished precipitously last spring on several occasions, leading to the dewatering and death of coho juveniles in the lowermost 100 feet of channel before the confluence with Mill Creek. In addition to my personal observations, information used to develop this memo includes Special Agent Roy's MOI's from 10/06/2008 and 12/10/2008, field notes and hourly flow stage data from professional observers monitoring fish and flow at the confluence between Mill and Felta creeks, and GIS and geologic maps.

Hydrogeologic Context

At the location of the Folger diversion, the stream flows from a small alluvial valley. This upper alluvial reach contributes the majority of the flow during low flow periods, as I observed on 22 January 2009. Beginning at the subject diversion dam, the stream is confined downstream in a bedrock channel that does not produce appreciable water during dry seasons. Felta Creek discharges from the bedrock reach into a short alluvial reach before joining the Mill Creek confluence. The channel in the lower alluvial reach is incised deeply and the soils are relatively fine-grained and impermeable. Both conditions result in the alluvium contributing negligible flow during dry seasons. Dewatered stream bed was observed from the confluence with Mill Creek for approximately 100 feet upstream in Felta Creek on January 22, 2009 during abnormally dry winter conditions. Upstream, at the Folger diversion structure there was surface flow, and in the bedrock reach at the seasonal dam there was surface flow. The Felta Creek confluence is highly sensitive to withdrawals upstream, as flow was beneath the surface on 22 January 2009. This is due to the incised channel with a coarse surface deposit, and the lack of stream bank water supply; the valley is composed of fine-grained material and is hydrologically disconnected from the stream.



The geology and hydrology make the lower Felta Creek setting sensitive to water diversion during low flow periods. The fish habitat is sensitive to flow reduction throughout the bedrock reach, and can dewater in the lowest reach because there is a coarse deposit of cobble on the bed.

Discussion

The Felta and Mill creeks confluence is in a shallow alluvial valley. So it is possible that wells nearby and downstream could draw down the water table and reduce the flow of the streams, especially during dry seasons. Pumping alluvial wells would drain water from porespace in the surrounding alluvial material, forming radial drawdown cones expanding some distance from wells, and intercepting stream flows. Drawdown cones begin to recover once pumping ceases as water infiltrates the surrounding porous material. Recovery of wells is typically slower than drawdown, and in this setting water table recovery would be an especially slow process. The water table would not recover during dry seasons, and given the lack of floodplain connection during floods to recharge the aquifer, it would recover slowly during normal hydrologic conditions.

Stream flow was monitored by the Coho Monitoring and Captive Broodstock Program in Mill Creek every hour from 1 April through 11 May 2008. The recording instruments were located within feet of the confluence with Felta Creek. The record of water level measurements indicates a gradual decline in stage from 0.55 to 0.25 feet over this period of time, with maximum daily range of stage 0.05 feet; approximately $\frac{6}{10}$ of an inch. Felta Creek was observed by staff monitoring the Mill Creek fish station to dry up and then resume flow over a period of 4-5 hours on 6 days, April 2, 3, 7, 9, 10 and 21, 2008.

The Mill Creek stage record has no anomalous dips during the period when Felta Creek was observed to dry and then rewet within a few hours. There is no indication of Mill Creek flow diminishing and then recovering on those days when Felta Creek dried up and later resumed flow. This indicates that Felta Creek flow diminished and then recovered while Mill Creek flow remained remarkably stable. If nearby wells were responsible for the observed drying of Felta Creek, both streams would have responded similarly. Both streams would have drawn down during periods of pumping, and then recovered slowly as the alluvial aquifer slowly recovered after pumping ceased.

At the Folger diversion, Felta Creek is impounded to create a pumping pool. The diverted stream flow is sprinkled over grape vines for frost protection and irrigation. Frost pumping was practiced repeatedly on 20 occasions last spring. Each occasion lasted from 4 to 9 hours, at a rate of approximately 200 to 260 gallons per minute. That rate is equivalent to 0.44 to 0.58 cubic feet per second. During low flow periods, that rate is approximately equal to all of the flow of Felta Creek, and approximately the flow I observed on 22 January 2009 during my site visit, which I estimated at less than one cfs. Therefore, it is likely that most or all of Felta Creek flow was diverted during the spring 2008 pumping episodes.

Conclusion

In my professional judgment, as informed with field evidence and hourly flow data, it was the surface diversion of water in the upper alluvial valley that dewatered lower Felta Creek on April 2, 3, 7, 9, 10 and 21, 2008, which resulted in the coho kill documented on 21 April 2008.

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To: Case File

From: Derek Roy, Special Agent

Subject: Supplemental Investigation Report

Covered period: From April 15, 2010 through April 15, 2010

Date of report: April 18, 2010

NARRATIVE

On April 15, 2010, I interviewed Joe PECHARICH, National Marine Fisheries Service (NMFS) Restoration Center employee. Prior to his employment with NMFS Restoration Center, PECHARICH was employed with the U.C. Cooperative Extension, Sonoma County. I asked PECHARICH about his employment with U.C. Cooperative Extension, Sonoma County, specifically during 2008. PECHARICH stated in 2008, while working for U.C. Cooperative Extension, Sonoma County his responsibility was to supervise the fish traps on Mill Creek (tributary to Dry Creek thence the Russian River) and Green Valley Creek (tributary to the Russian River). More specifically, he would oversee and participate in the monitoring, identification and documentation of the salmonids

OBEDZINSKI created of the observations on Felta Creek from April 2, 2008 through April 10, 2008. I asked PECHARICH to review this document and asked whether he was present on any of the dates listed. PECHARICH remembered being present at that location during the dates listed on the document. Specifically, PECHARICH remembered being present on April 2, 2008, April 3, 2008, and April 9, 2008. PECHARICH also stated that the description of the events listed on the document accurately reflected what he remembered occurring on those days. PECHARICH went on to say that the numbers that were listed on the document were very conservative. PECHARICH did not turn over every rock in the dewatered area to look for dead fish. He explained that when a pool starts to become dewatered the salmonids will dive under rocks to seek a water source. PECHARICH felt the actual number of coho "taken" would mostly have been "hundreds more" and the number of steelhead "taken" would have been "over a thousand" if every rock and pool would have been surveyed. PECHARICH stated they did not have the time or resources to check every rock and pool. PECHARICH said that on April 2nd, 3rd, 9th 2008, he and the crew were able to rescue coho from the drying pools. Bringing these living coho to the Warm Springs Hatchery was the priority, not documenting the mortalities. PECHARICH added that they also had hundreds of salmonids in the

U.C. Cooperative Extension fish trap on Mill Creek and Green Valley Creek that needed to be identified, documented and released. PECHARICH stated that when Felta Creek would dewater it affected the same areas on the watershed. This was true on all the days except April 9, 2008. PECHARICH mentioned that on April 9, 2008, Felta Creek became dewatered further up the watershed than he had ever seen before. More specifically, he stated that it became dewatered, maybe a 100 yards, upstream of the first bridge (near West Side Elementary School). PECHARICH stated this is when he first felt this dewatering event was being caused by "someone further upstream". I asked PECHARICH about his experience in identifying salmonids. PECHARICH said that he has spent his career identifying Chinook, steelhead and coho salmon. During one summer in Eureka, CA, he surveyed over eighty (80) streams to determine the presence/absence of salmonids. He also worked for the U.C. Cooperative Extension, Sonoma County for four (4) years (March 2005- February 2009). During this time, he supervised the identification of all the salmonids caught in their fish traps. He also prepared a yearly report based on these identifications. PECHARICH also provided me with a copy of his resume that details his experience relating to salmonid identification. I created a Memorandum of Interview (MOI) of this interview, which I have included as part

of his report (**SUPPLEMENTAL ATTACHMENT 1**).

On April 15, 2010, I interviewed FREY. FREY confirmed he was present on Felta Creek during a frost event in April of 2008 but could not remember the exact date. FREY stated that David LEWIS from the University of California Cooperative Extension (UCCE) told him about it. He went on to mention that LEWIS was also present during this event as well. FREY stated that while in the watershed he looked at the creek where it had dewatered. FREY could see that there were some fish stranded in this dewatered section. FREY could not tell whether the fish were coho or steelhead. FREY also stated that he witnessed the water return to the creek in the afternoon. FREY stated that he and LEWIS walked up the watershed to see if they could determine the cause. FREY stated that they were not able to determine the cause but "they did not walk up as far as the Stadnik's property". I created a MOI documenting this interview which I have included as part of this report (**SUPPLEMENTAL ATTACHMENT 2**).

On April 15, 2010, I received an email from OBEDZINSKI. In the email, OBEDZINSKI stated she had gone through her computer data base and accessed the salmonid survey data sheets from April 2,

3, 7, 9, 10, 20, 21 in 2008. She stated that on all of those dates either herself or PECHARICH were present on Felta Creek. Additionally, on April 10 and 21st of 2008, both she and PECHARICH were present. OBEDENSKI also wrote in her email that, "In 2008, the coho yoy in Felta were wild fish and they were the only wild coho that we know of that year in the Russian River." I have included this email as part of this report (**SUPPLEMENTAL ATTACHMENT 3**).

STATUS

Completed

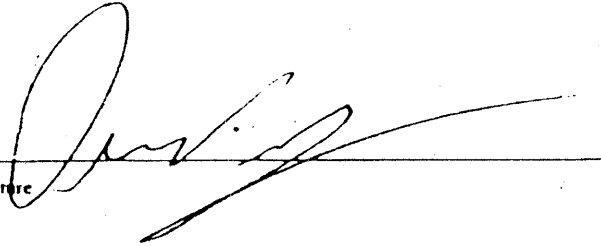


AGENT / OFFICER AFFIDAVIT

I declare under penalty of perjury under the laws of the United States that the foregoing report dated

April 16, 2010 and consisting of 5 pages is true and correct to the best of

my knowledge and belief.


Signature

April 16, 2010
Date

Special Agent
Title

Santa Rosa, CA
Official Duty Station

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National Marine Fisheries Service
Southwest Region, HCD
777 Sonoma Ave., Room 325
Santa Rosa, CA 95404-8528
Tel (707) 575-6061

Fax (707) 578-3435

February 17, 2009

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Hydrogeologic Context

At the location of the Folger diversion, the stream flows from a small alluvial valley. This upper alluvial reach contributes the majority of the flow during low flow periods, as I observed on 22 January 2009. Beginning at the subject diversion dam, the stream is confined downstream in a bedrock channel that does not produce appreciable water during dry seasons. Felta Creek discharges from the bedrock reach into a short alluvial reach before joining the Mill Creek confluence. The channel in the lower alluvial reach is incised deeply and the soils are relatively fine-grained and impermeable. Both conditions result in the alluvium contributing negligible flow during dry seasons. Dewatered stream bed was observed from the confluence with Mill Creek for approximately 100 feet upstream in Felta Creek on January 22, 2009 during abnormally dry winter conditions. Upstream, at the Folger diversion structure there was surface flow, and in the bedrock reach at the seasonal dam there was surface flow. The Felta Creek confluence is highly sensitive to withdrawals upstream, as flow was beneath the surface on 22 January 2009. This is due to the incised channel with a coarse surface deposit, and the lack of stream bank water supply; the valley is composed of fine-grained material and is hydrologically disconnected from the stream.



The geology and hydrology make the lower Felta Creek setting sensitive to water diversion during low flow periods. The fish habitat is sensitive to flow reduction throughout the bedrock reach, and can dewater in the lowest reach because there is a coarse deposit of cobble on the bed.

Discussion

The Felta and Mill creeks confluence is in a shallow alluvial valley. So it is possible that wells nearby and downstream could draw down the water table and reduce the flow of the streams, especially during dry seasons. Pumping alluvial wells would drain water from porespace in the surrounding alluvial material, forming radial drawdown cones expanding some distance from wells, and intercepting stream flows. Drawdown cones begin to recover once pumping ceases as water infiltrates the surrounding porous material. Recovery of wells is typically slower than drawdown, and in this setting water table recovery would be an especially slow process. The water table would not recover during dry seasons, and given the lack of floodplain connection during floods to recharge the aquifer, it would recover slowly during normal hydrologic conditions.

Stream flow was monitored by the Coho Monitoring and Captive Broodstock Program in Mill Creek every hour from 1 April through 11 May 2008. The recording instruments were located within feet of the confluence with Felta Creek. The record of water level measurements indicates a gradual decline in stage from 0.55 to 0.25 feet over this period of time, with maximum daily range of stage 0.05 feet; approximately $\frac{6}{10}$ of an inch. Felta Creek was observed by staff monitoring the Mill Creek fish station to dry up and then resume flow over a period of 4-5 hours on 6 days, April 2, 3, 7, 9, 10 and 21, 2008.

The Mill Creek stage record has no anomalous dips during the period when Felta Creek was observed to dry and then rewet within a few hours. There is no indication of Mill Creek flow diminishing and then recovering on those days when Felta Creek dried up and later resumed flow. This indicates that Felta Creek flow diminished and then recovered while Mill Creek flow remained remarkably stable. If nearby wells were responsible for the observed drying of Felta Creek, both streams would have responded similarly. Both streams would have drawn down during periods of pumping, and then recovered slowly as the alluvial aquifer slowly recovered after pumping ceased.

At the Folger diversion, Felta Creek is impounded to create a pumping pool. The diverted stream flow is sprinkled over grape vines for frost protection and irrigation. Frost pumping was practiced repeatedly on 20 occasions last spring. Each occasion lasted from 4 to 9 hours, at a rate of approximately 200 to 260 gallons per minute. That rate is equivalent to 0.44 to 0.58 cubic feet per second. During low flow periods, that rate is approximately equal to all of the flow of Felta Creek, and approximately the flow I observed on 22 January 2009 during my site visit, which I estimated at less than one cfs. Therefore, it is likely that most or all of Felta Creek flow was diverted during the spring 2008 pumping episodes.

Conclusion

In my professional judgment, as informed with field evidence and hourly flow data, it was the surface diversion of water in the upper alluvial valley that dewatered lower Felta Creek on April 2, 3, 7, 9, 10 and 21, 2008, which resulted in the coho kill documented on 21 April 2008.

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To: Case File

From: Derek Roy, Special Agent

Subject: Supplemental Investigation Report

Covered period: From April 15, 2010 through April 15, 2010

Date of report: April 18, 2010

NARRATIVE

On April 15, 2010, I interviewed Joe PECHARICH, National Marine Fisheries Service (NMFS) Restoration Center employee. Prior to his employment with NMFS Restoration Center, PECHARICH was employed with the U.C. Cooperative Extension, Sonoma County. I asked PECHARICH about his employment with U.C. Cooperative Extension, Sonoma County, specifically during 2008. PECHARICH stated in 2008, while working for U.C. Cooperative Extension, Sonoma County his responsibility was to supervise the fish traps on Mill Creek (tributary to Dry Creek thence the Russian River) and Green Valley Creek (tributary to the Russian River). More specifically, he would oversee and participate in the monitoring, identification and documentation of the salmonids

OBEDZINSKI created of the observations on Felta Creek from April 2, 2008 through April 10, 2008. I asked PECHARICH to review this document and asked whether he was present on any of the dates listed. PECHARICH remembered being present at that location during the dates listed on the document. Specifically, PECHARICH remembered being present on April 2, 2008, April 3, 2008, and April 9, 2008. PECHARICH also stated that the description of the events listed on the document accurately reflected what he remembered occurring on those days. PECHARICH went on to say that the numbers that were listed on the document were very conservative. PECHARICH did not turn over every rock in the dewatered area to look for dead fish. He explained that when a pool starts to become dewatered the salmonids will dive under rocks to seek a water source. PECHARICH felt the actual number of coho "taken" would mostly have been "hundreds more" and the number of steelhead "taken" would have been "over a thousand" if every rock and pool would have been surveyed. PECHARICH stated they did not have the time or resources to check every rock and pool. PECHARICH said that on April 2nd, 3rd, 9th 2008, he and the crew were able to rescue coho from the drying pools. Bringing these living coho to the Warm Springs Hatchery was the priority, not documenting the mortalities. PECHARICH added that they also had hundreds of salmonids in the

U.C. Cooperative Extension fish trap on Mill Creek and Green Valley Creek that needed to be identified, documented and released. PECHARICH stated that when Felta Creek would dewater it affected the same areas on the watershed. This was true on all the days except April 9, 2008. PECHARICH mentioned that on April 9, 2008, Felta Creek became dewatered further up the watershed than he had ever seen before. More specifically, he stated that it became dewatered, maybe a 100 yards, upstream of the first bridge (near West Side Elementary School). PECHARICH stated this is when he first felt this dewatering event was being caused by "someone further upstream". I asked PECHARICH about his experience in identifying salmonids. PECHARICH said that he has spent his career identifying Chinook, steelhead and coho salmon. During one summer in Eureka, CA, he surveyed over eighty (80) streams to determine the presence/absence of salmonids. He also worked for the U.C. Cooperative Extension, Sonoma County for four (4) years (March 2005- February 2009). During this time, he supervised the identification of all the salmonids caught in their fish traps. He also prepared a yearly report based on these identifications. PECHARICH also provided me with a copy of his resume that details his experience relating to salmonid identification. I created a Memorandum of Interview (MOI) of this interview, which I have included as part

of his report (**SUPPLEMENTAL ATTACHMENT 1**).

On April 15, 2010, I interviewed FREY. FREY confirmed he was present on Felta Creek during a frost event in April of 2008 but could not remember the exact date. FREY stated that David LEWIS from the University of California Cooperative Extension (UCCE) told him about it. He went on to mention that LEWIS was also present during this event as well. FREY stated that while in the watershed he looked at the creek where it had dewatered. FREY could see that there were some fish stranded in this dewatered section. FREY could not tell whether the fish were coho or steelhead. FREY also stated that he witnessed the water return to the creek in the afternoon. FREY stated that he and LEWIS walked up the watershed to see if they could determine the cause. FREY stated that they were not able to determine the cause but "they did not walk up as far as the Stadnik's property". I created a MOI documenting this interview which I have included as part of this report (**SUPPLEMENTAL ATTACHMENT 2**).

On April 15, 2010, I received an email from OBEDZINSKI. In the email, OBEDZINSKI stated she had gone through her computer data base and accessed the salmonid survey data sheets from April 2,

3, 7, 9, 10, 20, 21 in 2008. She stated that on all of those dates either herself or PECHARICH were present on Felta Creek. Additionally, on April 10 and 21st of 2008, both she and PECHARICH were present. OBEDENSKI also wrote in her email that, "In 2008, the coho yoy in Felta were wild fish and they were the only wild coho that we know of that year in the Russian River." I have included this email as part of this report (**SUPPLEMENTAL ATTACHMENT 3**).

STATUS

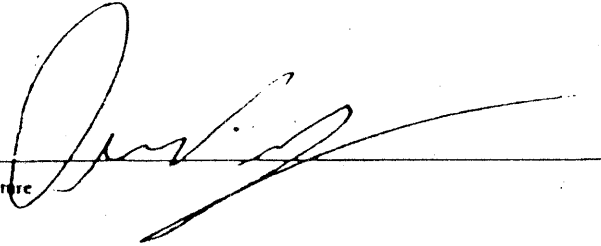
Completed



AGENT / OFFICER AFFIDAVIT

I declare under penalty of perjury under the laws of the United States that the foregoing report dated

April 16, 2010 and consisting of 5 pages is true and correct to the best of my knowledge and belief.


Signature

April 16, 2010
Date

Special Agent
Title

Santa Rosa, CA
Official Duty Station





